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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,603	08/07/2006	Takeshi Hirabayashi	128996	9553

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EXAMINER	
COHEN, STEFANIE J	

ART UNIT	PAPER NUMBER
4162	

MAIL DATE	DELIVERY MODE
08/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,603	HIRABAYASHI ET AL.	
	Examiner	Art Unit	
	STEFANIE COHEN	4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,7 and 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,7 and 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/9/2008; 4/17/2008; 8/7/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogura et al. (Japanese Unexamined Patent Publication No. 10-258232). Ogura teaches a catalyst for exhaust gas purification comprising a core part and a catalyst carrying layer. Ogura further teaches the core comprising cerium oxide which is an NO_X occlusion material and alumina and the catalyst layer comprising platinum supported on alumina and cerium oxide. Ogura, paragraph 25, also teaches it is desirable to have a ratio of .05-10 mol to 1 mol of ceria oxide to alumina a particle size ranging from .1-10 micrometers in the core part. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the particle size and the aluminum/ ceria ratio of the catalyst carrying layer to maximize the efficiency of the catalyst. It also would have been obvious to one of ordinary skill in the art at the time of the invention that when the molar number of ceria is greater than the molar number of alumina in the catalyst carrying layer, the alumina would be less impeding on the ceria oxygen storage capacities.

Regarding claim 5 and 8, Ogura, ex 13, teach platinum as the catalyst metal.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogura et al. (Japanese Unexamined Patent Publication No. 10-258232) in view of Wright (2001). Ogura teaches a catalyst for exhaust gas purification comprising a core part and a catalyst carrying layer. Ogura further teaches the core comprising cerium oxide which is an NO_X occlusion material and alumina and the catalyst layer comprising platinum supported on alumina and cerium oxide. Ogura, paragraph 25, also teaches it is desirable to have a ratio of .05-10 mol to 1 mol of ceria oxide to alumina a particle size ranging from .1-10 micrometers in the core part. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the particle size and the aluminum/ ceria ratio of the catalyst carrying layer to maximize the efficiency of the catalyst. It also would have been obvious to one of ordinary skill in the art at the time of the invention that when the molar number of ceria is greater than the molar number of alumina in the catalyst carrying layer, the alumina is less impeding on the ceria oxygen storage capacities. Although Ogura teaches a composition for a catalyst, Ogura does not teach using sols as starting components to form a catalyst. Wright teaches advantages of using sol- gel synthesized materials. Wright, sect 1.4, teaches advantages of using sol- gel sol- gel synthesized materials including temperatures required for all stages are low and close to room temperature. This results in a minimal thermal degradation and high purity. Wright further teaches control may be achieved

over particle size and pore size, porosity and pore wall chemistry of the final material. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a ceria sol and alumina sol to form the Ogura catalyst because Wright teaches advantages of sols which will result in a highly pure Ogura catalyst.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogura et al. (Japanese Unexamined Patent Publication No. 10-258232) in view of Wright (2001) and in further view of Pinnavaia (4981825). Ogura teaches a catalyst for exhaust gas purification comprising a core part and a catalyst carrying layer. Ogura further teaches the core comprising cerium oxide which is an NO_X occlusion material and alumina and the catalyst layer comprising platinum supported on alumina and cerium oxide. Ogura, paragraph 25, also teaches it is desirable to have a ratio of .05-10 mol to 1 mol of ceria oxide to alumina a particle size ranging from .1-10 micrometers in the core part. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the particle size and the aluminum/ ceria ratio of the catalyst carrying layer to maximize the efficiency of the catalyst. It also would have been obvious to one of ordinary skill in the art at the time of the invention that when the molar number of ceria is greater than the molar number of alumina in the catalyst carrying layer, the alumina would be less impeding on the ceria oxygen storage capacities therefore improving the efficiency of the catalyst. Ogura, ex. 13, teaches forming a core part for the catalyst by mixing K_2O, TiO_2 and Al_2O_3 and further mixing CeO_2 but does not teach using sols as starting components to form a catalyst. Wright teaches advantages of using sol- gel

synthesized materials. Wright, sect 1.4, teaches advantages of using sol- gel sol- gel synthesized materials including temperatures required for all stages are low and close to room temperature. This results in a minimal thermal degradation and high purity. Wright further teaches control may be achieved over particle size and pore size, porosity and pore wall chemistry of the final material. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a ceria sol and alumina sol to create the Ogura catalyst because Wright teaches advantages of sols which will result in a highly pure Ogura catalyst. Although Ogura teaches a process for producing the catalyst, Ogura does not teach adjusting the pH of the solution. Pinnavaia teaches mixing a silica sol gel useful for catalytic gaseous reactions. Pinnavaia, ex 1, teaches the pH of the silica sol gel was decreased from 10 to 3 by adding HCl. It would have been obvious to one of ordinary skill in the art at the time of the invention to add a calculated amount of HCl to the Ogura core components because this is one specific way of reaching a necessary isoelectric point. It also would have been obvious to one of ordinary skill in the art at the time of the invention that the isoelectric points of ceria and aluminum depend on the starting material of the elements and can easily be adjusted to optimize the performance of the catalyst. Ogura further teaches the solution was stirred, grinded and calcinated to form the core powder part.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is

(571)270-5836. The examiner can normally be reached on Monday through Thursday 8:00am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jenny McNeil can be reached on 5712721540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stefanie Cohen 8/15/2008

SC

/Jennifer McNeil/
Supervisory Patent Examiner, Art Unit 4162